SHIP SYSTEM	SUBSYSTEM	MRC CODE
Elect Plant General 300	Ship Service Cable 3210	R-

SYSTEM	EQUIPMENT	RATES	M/H
Power Distribution System 320	Cableways Electrical 3211	GS-11/12	80.0

TOTAL M/H
80.0
ELAPSED TIME

MAINTENANCE REQUIREMENT DESCRIPTION
1. Conduct SEMAT assessment procedure for cables, cableways, and penetrations.

SAFETY PRECAUTIONS
1. Forces afloat comply with NAVOSH Program Manual for Forces Afloat, OPNAVINST 5100.19 series.

TOOLS, PARTS, MATERIALS, TEST EQUIPMENT

MATERIALS
1. [2277] Pad, writing paper
2. [2278] Pencil

TOOLS
1. [1350] Tape, measuring, 3/8" steel, 100 FT, hand crank
2. [2271] Flashlight, Type 3, style 1, explosive proof
3. [3886] Screwdriver, flat tip, 6"
4. Knife, pocket, electricians
5. Rule, folding, 6' NSN 5210-00-293-3511

MISCELLANEOUS
1. Electrical Information Handbook, NAVSEA #9300-A5-GYD-010
2. Ships Drawing - Cableway one-line diagram-if available

NOTE: Numbers in brackets can be referenced to Standard PMS Materials Identification Guide (SPMIG) for stock number identification.

PROCEDURE

NOTE 1: Accomplish before availability, after availability, and before deployment. Do not accomplish during availability.

NOTE 2: Number of man-hours assigned are average for DD-class ships and may require adjustment for larger class of ships.

NOTE 3: Shipboard electrical cable deficiencies fall into one of three categories:

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PROCEDURE (Contd)

(1) Category One: Immediate hazard. Those items which are personnel safety hazards, electrical fire hazards, or which negate firebreak integrity.
(2) Category Two: Potential hazard. Those items which require corrective action to ensure continued reliable safe performance or maintain watertight integrity but are not of immediate danger to personnel or equipment.
(3) Category Three: Non-hazardous. Those items which are not hazardous to personnel and equipment but are not in compliance with approved standard installation practices of DOD-STD-2003 (Navy) or other Naval instructions.

Preliminary

a. Review applicable Material Assessment Book or JSNs from the ship's CSMP for known discrepancies to be assessed under this procedure.
b. Obtain a copy of the ship's Cableway One-line diagram, if one exists.

1. **Conduct SEMAT Assessment Procedure for Cables, Cableways, and Penetrations.**

NOTE 4: Visually assess all cables and cableways in accordance with criteria listed. Areas to be assessed, but not limited to are:
(1) Main horizontal and vertical cableways in passageways and other accessible areas. (For assessment purposes, a main cableway is defined as 6 or more cables running together in a cable hanger.)
(2) Deck and bulkhead penetrations for cableways in passageways and other accessible areas.
(3) Penetrations and cableways in topside areas. (A topside area is defined as all shipboard areas continuously exposed to the weather including main deck and above, catwalks, and sponson decks.)
(4) Local cableway runs (a local cableway is defined as cables which branch off of the main cableway to equipment. Local cableways shall be assessed if time permits.)

NOTE 5: All category 1 and 2 deficiency items are marked by an asterisk (*).

NOTE 6: The assessment procedures list the criteria and Table I the category for each deficiency.

a. Assess cable installation for the following:
*(1) Minimum bend radius exceeded to the point of deforming the cable.
*(2) Equipment connector supporting weight of cable (more than 32 inches of cable from last support to end use equipment, 18 inches from shock mounted equipment).
*(3) Cables run on or near hot objects (steam or exhaust pipes, griddles, ovens, etc.).
*(4) Non-low smoke cable installed.
*(5) Cable run outside of hangers.
*(6) Lack of slack at expansion joints.
*(7) Excess slack between hangers (minimum distance of 6 feet 4 inches between deck and cable).

Table I

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PROCEDURE (Contd)

*(8) Excess cable slack stored in wireway.

b. Assess for cable damage indicated as follows:
*(1) Bulging, bubbling or discoloration of cable jacket (evidence of overloading, overheating or hot spots).
*(2) Cable chafed or cut through inner wire insulation.
*(3) Cable pulled out of equipment/junction box penetration and leads exposed.
*(4) Cable chafed or cut through outer jacket only.
(5) Armored and unarmored cables in contact at an oblique angle causing chafing of unarmored jacket.

c. Assess dead-ended cables for the following:
*(1) Cables dead-ended and not properly end-sealed.
*(2) Cables for future use not properly sealed and labeled on both ends for specific use.
*(3) Cable dead-ended and end-sealed properly.

d. Assess spliced cables for the following:
*(1) Improper materials/methods used for splicing, or evidence of loose joints.
*(2) Individual conductor joints not staggered within splice of multi-conductor cable.
*(3) Cable splice located in bend of cable.

e. Assess cable banding for the following:
*(1) Banding cuts cable outer jacket (banding too tight).
*(2) Bailing wire left on cables.
*(3) Cable bands cut and left in wireway.
*(4) Banding compressing outer jacket (banding too tight but not cutting jacket).
*(5) Plastic tie wrap used in place of banding straps (metal banding strap required).
*(6) Channel rubber not installed where required (see next two items).
*(7) For horizontal cable runs- Banding not installed at breakout hangers before and after penetrations or at change of direction of wireway. (Channel rubber required at each band.)
*(8) For vertical cable runs- No banding or loose banding (banding and channel rubber required on every hanger).

f. Assess cableways; for the following:
*(1) Cable hangers or hardware cutting into the cable jacket.
*(2) Improper hanger spacing (Cable hangers are required at least every 32 inches except that hangers for multiple-tier overhead aluminum decks shall be spaced every 16 inches).
*(3) Inadequate cableway support (hangers, hardware, tiers, or cable straps missing) or welds cracked.
*(4) Inverted "T" bar hangers installed horizontally on bulkheads.
*(5) One half inch clearance between cable run and hanger or structure above not provided.
*(6) Overloaded cable hangers. (No more than one row of cables permitted per cable hanger tier. Where space is limited, and specific approval has been obtained, double banking (two rows max.) of cables on tiers will be permitted, provided the clearance between the top of the upper layer of cables and the tier above is at least 3/8 inch.)

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PROCEDURE (Contd)

*(7) Maximum number of tiers exceeded:
(a) Max. on bulkheads (vertical)
(b) Max. on overheads (horizontal) (steel decks)
(c) Max. on overheads (horizontal) (aluminum decks)
(d) Max. in main cableways in machinery spaces and boiler rooms with NAVSEA approval

g. Assess cable entrance to equipment for the following:
*(1) Cable supporting the weight of equipment (power junction boxes, lighting fixtures, switch boxes, etc.).
*(2) Watertight penetrations not utilized for entrance to watertight power equipment enclosures.
*(3) Drip loops, drip shields, plastic sealer or bottom penetration not utilized for entrance to non-watertight drip-proof equipment enclosures.
*(4) Cable can be moved in and out of stuffing tube. Tube improperly packed or not packed.
*(5) Nylon tube base loose in enclosure. O-ring missing.
*(6) Cable supporting the weight of low voltage equipment (sound-powered junction boxes, equipment, etc.).
(7) Drip loops, drip shields, plastic sealer or bottom penetration not utilized for entrance to non-watertight drip-proof sound-powered equipment enclosures.
*(8) Watertight penetrations not utilized for entrance to watertight sound-powered equipment enclosures.

h. Assess non-watertight deck or bulkhead penetration for the following:
*(1) No plastic sealer around cables through collars where required.
*(2) Cable dead-ended in deck/bulkhead watertight penetration and not end-sealed properly.
*(3) Inadequate chafing protection at collars and damage evident on cable.
*(4) No plastic sealer around cable at stuffing tubes which are exposed to the weather.

NOTE 7: If plastic sealer is installed at locations other than those exposed to the weather, it is not required to be removed.

(5) Chafing protection (Collars) not installed at non-watertight deck or bulkhead cableway penetrations.

i. Assess watertight deck or bulkhead penetration for the following:
*(1) Cable dead-ended in deck/bulkhead watertight penetration and not end-sealed properly.
*(2) No plastic sealer around cable at stuffing tubes which are exposed to the weather.

NOTE 8: If plastic sealer is installed at locations other than those exposed to the weather, it is not required to be removed.

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PROCEDURE (Contd)

j. Assess deck/bulkhead watertight cable entrance for the following:
   *(1) Stuffing tube or kickpipe not utilized (cable installed without tube).
   *(2) Unused stuffing tube or kickpipe not plugged.
   *(3) Stuffing tube or kickpipe assembly incomplete (missing gland nut, packing, or pipe connector).
   *(4) Stuffing tube assembly incorrect (improper packing, etc.).
   *(5) Multiple cables in a single stuffing tube or kickpipe.
   *(6) Stuffing tube or kickpipe damaged to the point where complete assembly not possible (cracked welds, damaged threads, out-of-round, etc.).
   (7) Stuffing tube or kickpipe too small for size of cable.

k. Assess watertight deck or bulkhead penetrations using multiple cable transits for the following:
   *(1) Insert blocks, compression bolts or filler blocks missing from multiple cable transit.
   *(2) Incorrect type of RTV used to seal multiple cable transit blocks.
   *(3) Multiple cable transits installed in bulkheads or decks exposed to the weather.
   *(4) Improper size blocks used for size of cable installed in a multiple cable transit, violating watertight integrity.

2. **Record all discrepancies identified on applicable SEMAT discrepancy reporting forms (2-K or Material Assessment Form).**

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DEFICIENCY CATEGORY LIST		
DEFICIENCY ITEM	**DEFICIENCY CATEGORY**	
CABLE	**1**	**2**
1.a. INSTALLATION	EXCEEDS MIN BEND RADIUS	
	EQPT CONNECTOR SUPPORTS CABLE WT	
	CABLE ON/NEAR HOT OBJECTS	
	NON-LOW SMOKE CABLE	
		CABLE RUN OUTSIDE OF HANGERS
		NO SLACK AT EXP JTS
		EXCESS SLACK BETWEEN HANGERS
		EXCESS CABLE STORED IN CBWY
1.b. CABLE DAMAGE	BULGING/DISCOLOR	
	CHAFED/CUT-THRU	
	LOOSE OR LEADS EXPOSED	
		ARMOR CAUSING CHAFING
1.c. DEAD-ENDED	NOT END-SEALED	
	NOT LABELED FOR FUTURE USE	
		NOT SEALED
1.d. SPLICES	IMPROPER METHOD/ MATERIALS	
		NOT STAGGERED
		SPLICE IN BEND

TABLE I

DEFICIENCY CATEGORY LIST		
DEFICIENCY ITEM	**DEFICIENCY CATEGORY**	
BANDING	**1**	**2**
1.e. ALL RUNS	CABLE JACKET CUT	
	BAILING LEFT ON CABLES	
		BANDS CUT LEFT IN CBWY
		TOO TIGHT - NOT CUTTING JACKET
		PLASTIC TIE IN LIEU OF METAL
		NO CHANNEL RUBBER
		IMPROPER BANDING
CABLEWAYS	**1**	**2**
1.f. CABLEWAYS	HGR/HARDWARE CUT THRU JACKET	
		INADEQUATE SUPPORT
		IMPROPER HGR SPACING
		T-BARS HORIZ ON BHD
		NO 1/2" CLEAR.
		OVERLOADED HGRS
		MAX TIERS EXCEEDED

TABLE I

PROCEDURE (Contd)

DEFICIENCY CATEGORY LIST		
DEFICIENCY ITEM	**DEFICIENCY CATEGORY**	
CABLE ENTRANCE	**1**	**2**
1.g EQPT CONNECTIONS		
	CABLE SUPPORTS EQPT WEIGHT	
	PENETRATION NOT W/T	
	NO DRIP LOOPS OR SHIELDS	
	TUBE IMPROPERLY PACKED	
	NYLON TUBE BASE LOOSE	
DK/BHD PENETRATIONS	**1**	**2**
1.h NON-WATERTIGHT	NO PLASTIC SEAL AT COLLARS	
	NOT END SEALED	
	CHAFING AT COLLARS	
		NO PLASTIC SEALER
1.i. WATERTIGHT	NO PLASTIC SEAL AT COLLARS	
		NO PLASTIC SEALER
1.j. W/T CABLE ENTRANCE	STUFFING TUBE NOT USED	
	UNUSED TUBE NOT PLUGGED	
	INCOMPLETE ASSY	
		INCORRECT ASSY
		MULTIPLE CABLES IN ONE TUBE
		DAMAGED TUBE

TABLE I

PROCEDURE (Contd)

DEFICIENCY CATEGORY LIST		
DEFICIENCY ITEM	**DEFICIENCY CATEGORY**	
DK/BHD PENETRATIONS	**1**	**2**
1.k. MULTI-CABLE TRANSITS	MISSING COMPONENTS	
	INCORRECT RTV	
	MCT IN WEATHER	
		WRONG SIZE BLOCKS

TABLE I

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